



EXPRESS MAIL NO. EV449559330US

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Mitsuru Furusawa  
Application No. : 10/810,486  
Filed : March 26, 2004  
For : METHOD AND SYSTEM FOR RAPIDLY  
CONFERRING A DESIRED TRAIT TO AN  
ORGANISM

Art Unit : 1642  
Docket No. : 690116.401C1  
Date : November 12, 2004

Mail Stop Missing Parts  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents:

In accordance with 37 CFR 1.56 and 1.97 through 1.98, applicant wishes to make known to the U.S. Patent and Trademark Office the references set forth on the attached Form PTO-1449. This application relies, under 35 U.S.C. § 120, on the earlier filing date of prior Application No. 10/684,141 filed October 10, 2003. The references listed on the attached Form PTO-1449 were submitted to and/or cited by the Patent and Trademark Office in this prior application and, therefore, are not required to be provided in this application. If the Examiner wishes, copies will be provided upon request. However, references DE to DI, DQ to DS, and EI to EO were not previously submitted in the prior application and are therefore provided herewith. As to any reference supplied, applicant does not admit that it is "prior art" under 35 U.S.C. §§ 102 or 103, and specifically reserves the right to traverse or antedate any such reference, as by a showing under 37 CFR 1.131 or other method. Although the aforesaid references are made known to the Patent and Trademark Office in compliance with applicant's duty to disclose all

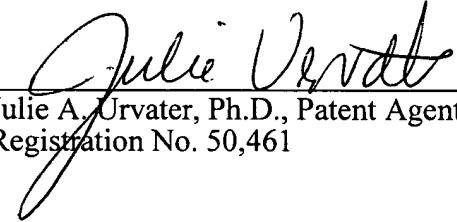
information he is aware of which is believed relevant to the examination of the above-identified application, applicant believes that his invention is patentable.

Applicants note that reference EL is written in Japanese. Unfortunately, an English language abstract is not available for this journal reference at this time.

Please acknowledge receipt of this Information Disclosure Statement and kindly make the cited references of record in the above-identified application.

Applicant believes this Information Disclosure Statement has been timely filed, however, the Director is authorized to charge any fee due by way of this Information Disclosure Statement to our Deposit Account No. 19-1090.

Respectfully submitted,  
Seed Intellectual Property Law Group PLLC

  
Julie A. Urvater, Ph.D., Patent Agent  
Registration No. 50,461

Enclosures:

Postcard  
Form PTO-1449  
Cited References (10)

701 Fifth Avenue, Suite 6300  
Seattle, Washington 98104-7092  
Phone: (206) 622-4900  
Fax: (206) 682-6031

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Sheet 1 of 5

FORM PTO-1449 (REV.7-80)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		ATTY. DOCKET NO. 690116.401C1	APPLICATION NO. 10/810,486
				APPLICANT Mitsuru Furusawa	
				FILING DATE March 26, 2004	GROUP ART UNIT 1642
INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)					

**U.S. PATENT DOCUMENTS**

*EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	AA						

**FOREIGN PATENT DOCUMENTS**

		DOCUMENT NUMBER	DATE	COUNTRY	TRANSLATION
					YES NO
	AB				

**OTHER PRIOR ART** (*Including Author, Title, Date, Pertinent Pages, Etc.*)

AC	Aoki, K. et al., "Promotion of Evolution by Intracellular Coexistence of Mutator and Normal DNA Polymerases," <i>J. Theor. Biol.</i> 209:213-222, 2001.
AD	Araki, H. et al., "Cloning DPB3, the Gene Encoding the Third Subunit of DNA Polymerase II of <i>Saccharomyces Cerevisiae</i> ," <i>Nucleic Acids Research</i> 19(18):4867-4872, 1991.
AE	Boulet, A. et al., "Structure and Function of the <i>Saccharomyces Cerevisiae</i> CDC2 Gene Encoding the Large Subunit of DNA Polymerase III," <i>The EMBO Journal</i> 8(6):1849-1854, 1989.
AF	Doi, H. et al., "Evolution is Promoted by Asymmetrical Mutations in DNA Replication – Genetic Algorithm with Double-Stranded DNA - , " <i>Fujitsu Sci. Tech.</i> 32(2):248-255, December 1996.
AG	Eigen, M., "Selforganization of Matter and the Evolution of Biological Macromolecules," <i>Die Naturwissenschaften</i> 58:465-523, 1971.
AH	Eigen, M., "The Hypercycle. A Principle of Natural Self-Organization," <i>Die Naturwissenschaften</i> 64:541-565, 1977.
AI	Eshleman, J. et al., "Increased Mutation Rate at the <i>hprt</i> Locus Accompanies Microsatellite Instability in Colon Cancer," <i>Oncogene</i> 10:33-37, 1995.
AJ	Fancino, P. et al., "Asymmetries Generated by Transcription-Coupled Repair in Enterobacterial Genes," <i>Science</i> 272:107-112, 1996.
AK	Furusawa, M. et al., "Promotion of Evolution: Disparity in the Frequency of Strand-Specific Misreading Between the Lagging and Leading DNA Strands Enhances Disproportionate Accumulation of Mutations," <i>J. Theor. Biol.</i> 157:127-133, 1992.
AL	Furusawa, M. et al., "Asymmetrical DNA Replication Promotes Evolution: Disparity Theory of Evolution," <i>Genetica</i> 102/103:333-347, 1998.

EXAMINER	DATE CONSIDERED

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	BA						

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	BB				

**OTHER PRIOR ART** (*Including Author, Title, Date, Pertinent Pages, Etc.*)

BC		Fijalkowska, I. et al., "Unequal Fidelity of Leading Strand and Lagging Strand DNA Replication on the <i>Escherichia Coli</i> Chromosome," <i>Proc. Natl. Acad. Sci. USA</i> 95:10020-10025, August 1998.
BD		Gawel, D. et al., "Asymmetry of Frameshift Mutagenesis During Leading and Lagging-Strand Replication in <i>Escherichia Coli</i> ," <i>Mutation Research</i> 501:129-136, 2002.
BE		Goldsby, R. et al., "High Incidence of Epithelial Cancers in Mice Deficient for DNA Polymerase δ Proofreading," <i>Proc. Natl. Acad. Sci.</i> 99(24):15560-15565, November 2002.
BF		Iwaki, T. et al., "Preferential Replication-Dependent Mutagenesis in the Lagging DNA Strand in <i>Escherichia Coli</i> ," <i>Mol. Gen. Genet.</i> 251:657-664, 1996.
BG		Kang, S. et al., "Expansion and Deletion of CTG Repeats from Human Disease Genes are Determined by the Direction of Replication in <i>E. Coli</i> ," <i>Nature Genetics</i> 10, 213-218, June 1995.
BH		Kunkel, T. et al., "Exonucleolytic Proofreading by Calf Thymus DNA Polymerase δ," <i>Proc. Natl. Acad. Sci. USA</i> 84:4865-4869, July 1987.
BI		Maliszewska-Tkaczyk, M. et al., "SOS Mutator Activity: Unequal Mutagenesis on Leading and Lagging Strands," <i>Proc. Natl. Acad. Sci. USA</i> 97(23):12678-12683, November 2000.
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BK		Morrison, A. et al., "A Third Essential DNA Polymerase in <i>S. Cerevisiae</i> ," <i>Cell</i> 62:1143-1151, September 1990.
BL		Ohya, T. et al., "Structure and Function of the Fourth Subunit(Dpb4p) of DNA Polymerase ε in <i>Saccharomyces Cerevisiae</i> ," <i>Nucleic Acids Research</i> 28(20):3846-3852, 2000.

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CC	Roberts, J. et al., "Fidelity of a Human Cell DNA Replication Complex," <i>Proc. Natl. Acad. Sci. USA</i> 85:7064-7068, October 1988.
CD	Robert, J. et al., "Frameshift Fidelity During Replication of Double-Stranded DNA in HeLa Cell Extracts," <i>Biochemistry</i> 32:4083-4089, 1993.
CE	Robert, J. et al., "Exonucleolytic Proofreading of Leading and Lagging Strand DNA Replication Errors," <i>Proc. Natl. Acad. Sci. USA</i> 88:3465-3469, April 1991.
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CG	Rosche, W. et al., "Differential DNA Secondary Structure-Mediated Deletion Mutation in the Leading and Lagging Strands," <i>Journal of Bacteriology</i> 177(15):4385-4391, August 1995.
CH	Tanabe, K. et al., "A Conspicuous Adaptability to Antibiotics in the Escherichia Coli Mutator Strain, <i>DNAQ49</i> ," <i>FEMS Microbiology Letters</i> 176:191-196, 1999.
CI	Trinh, T. et al., "Preferential DNA Secondary Structure Mutagenesis in the Lagging Strand of Replication in E. Coli," <i>Nature</i> 352:544-547, August 1991.
CJ	Veaute, X. et al., "Greater Susceptibility to Mutations in Lagging Strand of DNA Replication in <i>Escherichia Coli</i> than in Leading Strand," <i>Science</i> 261:598-600, July 1993.
CK	Wada, K-N. et al., "A Neo-Darwinian Algorithm: Asymmetrical Mutations due to Semiconservative DNA-Type Replication Promote Evolution," <i>Proc. Natl. Acad. Sci. USA</i> 90:11934-11938, December 1993.
CL	Weston-Hafer, K. et al., "Deletions in Plasmid pBR322: Replication Slippage Involving Leading and Lagging Strands," <i>Genetics</i> 127:649-655, April 1991.

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					YES      NO
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	DJ	Wu, C-I. et al., "Inequality in Mutation Rates of the Two Strands of DNA," <i>Nature</i> 327:169-170, May 1987.
	DK	Furusawa, M., <i>Iden</i> , pp. 148-158, July 1996.
	DL	Furusawa, M., <i>Iden</i> 8:92-96, March 2001.
	DM	Furusawa, M., "Asymmetrical DNA Replication Promotes Evolution," <i>Pathological Physiology</i> 14:675-681, September 1995.
	DN	Furusawa, M., <i>KAST Report</i> 7(1):20-25, 1995.
	DO	Furusawa, M., <i>BioHistory</i> , pp. 012-013, November 2001.
	DP	Furusawa, M., <i>Chemistry and Biology</i> 34(2):78-79, 1996.
	DQ	Barnes, M., et al., "Localization of the Exonuclease and Polymerase Domains of <i>Bacillus subtilis</i> DNA Polymerase III," <i>Gene</i> 111:43-49, 1992.
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	DS	Maki, H., "Natural Mutation and Repair Mechanism," <i>Cell Engineering</i> 13(8):663-672, 1994.

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	EN					
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EP	Morrison, A., et al., "Pathway Correcting DNA Replication Errors in <i>Saccharomyces cerevisiae</i> ," <i>EMBO J.</i> 12(4):1467-73, April 1993.
EQ	Stemmer, W., "Rapid Evolution of a Protein in <i>vitro</i> by DNA Shuffling," <i>Nature</i> 370(6488):389-91, August 4, 1994.
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